

I claim:

1. A capacitor comprising:
  - a cathode having a coating of an amorphous metal oxide;
  - an anode having a coating of an amorphous metal oxide;
  - an substrate layer containing an electrolyte disposed between said cathode and anode;
  - a conductive rubber layer disposed on the exterior surface of each said cathode and anode;
  - first and second current collectors disposed, respectively, adjacent the outer surfaces of said conductive rubber layers; and
  - a metallic coating interposed between each said rubber layer and its adjacent current collector to reduce the contact resistance present in said capacitor.
2. The capacitor as claimed in claim 1, wherein said metal oxide is selected from oxides of the group consisting of ruthenium, iridium, cobalt, nickel, molybdenum, tungsten, manganese, titanium, tantalum and zinc.
3. The capacitor as claimed in claim 2, wherein said metal oxide comprises ruthenium oxide.

4. The capacitor as claimed in claim 3, wherein said metal oxide comprises amorphous hydrated ruthenium oxide.
5. The capacitor as claimed in claim 1, wherein said metallic coating is approximately 0.0025-0.1000 mm thick.
6. The capacitor as claimed in claim 1, wherein said metallic coating is selected from at least one metal of the group consisting of Ag, Cu, stainless steel, Al, Ti, Ni, Au, Pt, Ta and alloys thereof.
7. The capacitor as claimed in claim 1, wherein said electrolyte is a liquid.
8. The capacitor as claimed in claim 7, wherein said electrolyte comprises sulfuric acid.
9. A capacitor comprising:
  - a plurality of stacked electrochemical cells each said cell including a pair of electrodes having amorphous metal oxide therein with said electrodes being separated by an electrolyte soaked layer, said stack of cells having first and second end surfaces;
  - a conductive rubber layer interposed between adjacent stacked electrochemical cells;
  - a pair of conductive rubber end layers covering, respectively, said first and second end surfaces of said stacked electrochemical cells;

first and second current collectors disposed, respectively, proximately adjacent said pair of conductive rubber end layers; and

a metallic coating interposed between each said current collector and its respectively adjacent conductive rubber end layer.

10. The capacitor as claimed in claim 9, wherein said electrolyte of each said cell comprises a liquid soaked substrate layer.
11. The capacitor as claimed in claim 10, wherein said liquid electrolyte comprises sulfuric acid.
12. The capacitor as claimed in claim 9, wherein said metallic coating is layered onto each of said conductive rubber end layers.
13. The capacitor as claimed in claim 9, wherein said metallic oxide is selected from oxides of the group consisting of ruthenium, iridium, cobalt, nickel, molybdenum, tungsten, manganese, titanium, tantalum and zinc.
14. The capacitor as claimed in claim 13, wherein said metallic oxide comprises ruthenium oxide.
15. The capacitor as claimed in claim 9, wherein said metallic coating is approximately 0.0025-0.01000 mm thick and is selected from the group consisting of Ag, Cu, stainless steel, Al, Ti, Ni, Au, Pt, Ta and alloys thereof.

16. A capacitor having low internal resistance and fast charge/discharge rate, said capacitor comprising:

a plurality of electrochemical cells stacked on top of each other with a conductive rubber layer interposed between each stacked cell, said stack of cells having an upper and a lower end surface;

each said cell including a cathode having a coating of an amorphous metal oxide, an anode having a coating of an amorphous metal oxide, and an electrolyte-soaked substrate layer disposed between said cathode and anode;

conductive rubber end layers covering, respectively, said upper and lower end surfaces of said stacked electrochemical cells;

first and second current collectors disposed, respectively, proximate said pair of conductive rubber end layers; and

a metallic coating disposed on each said conductive rubber end layer between said end layer and its adjacent current collector.

17. The capacitor as claimed in claim 16, wherein each said conductive rubber layer comprises a composite of carbon powder, carbon fibers and natural rubber.

18. The capacitor as claimed in claim 16, wherein said electrolyte comprises sulfuric acid.

19. The capacitor as claimed in claim 16, wherein said metallic coating is approximately 0.0025-0.1000 mm thick and is selected from the group consisting of Ag, Cu, stainless steel, Al, Ti, Ni, Au, Pt, Ta and alloys thereof.
20. The capacitor as claimed in claim 16, wherein said metal oxide comprises amorphous hydrated ruthenium oxide.